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## ARE THE SOCIAL SCIENCES ANSWERABLE TO COMMON PRINCIPLES OF METHOD? (*Concluded*)

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Having replied in the first part of this paper<sup>1</sup> to certain specific criticisms in Dr. Hoxie's "Rejoinder,"<sup>2</sup> I shall now attempt to express more positively two or three rather elementary methodological principles. I am not yet sure whether there is a real difference of judgment about them between Dr. Hoxie and myself, or whether the argument amounts only to an incident in the race-hatreds between vocabularies. In either case, no better way of approaching an understanding is in sight than the frankest possible use of the words at command on both sides.

In reviewing the scope of this discussion I am impressed with the necessity of appeal to primary principles which the social sciences can hardly repudiate. As I see the situation, the occasion for such a discussion as this arises from the degree of inattention to formulation of these principles which has become habitual. It is hard to believe that responsible scholars would deliberately deny their substantial validity. I have the best of reasons for believing that Dr. Hoxie's own practice, for example, is a salutary object-lesson in consistent respect for the very principles about which we find ourselves disagreeing in the abstract. As I said in the first part of this paper, we seem to be unable to use words in a way that makes us sure of each other's ideas. The removal of the misunderstanding, I repeat, is probably not feasible through a process of logical proof. It must be chiefly through increased attention to conditions or elements of the scientific process which are out of sight when we

<sup>1</sup> *American Journal of Sociology*, Vol. XIII, pp. 1 ff.

<sup>2</sup> *American Journal of Sociology*, Vol. XII, pp. 739 ff.

attempt to calculate methodological values merely from the standpoint of a specialized interest.

In the first place, I appeal to the principle that *science can never be in the strict sense an individual pursuit*. No man could be a scientist in a proper sense who should actually cut himself off from other men's interests, and should utterly disregard the reaction of other men's minds upon reality. One of the temptations of the very conditions which on the whole are necessary for the utmost promotion of science—viz., relative detachment from all other interests except desire to investigate our own problems—is the impulse to imagine that science is wholly a matter of our own choice. We are tempted to assume that we are at liberty to plot any plan of research whatsoever, regardless of its relation to anyone's else researches, and that our interest in this isolated pursuit will qualify it as science if we are only industrious enough. It sometimes follows that academic men so lose the sense of proportion that they withdraw from the real scientific movement and pursue curious but profitless quests which merely cater to pedantic or dilettantish whims. Busy puttering about the unrelated and the unrelatable is not science. Genuine science is always a division of the world's labor of discovering the facts and the connections of facts through which men may become intelligent about themselves and their relations with the rest of the universe. It is as vicious for a man who assumes the functions of a scientist not to keep strictly within the limitations of "things-as-they-are," as it would be for a train dispatcher to absolve himself from precise regard for the movements of his trains, and to substitute a hypothetical manipulation of trains thought of in some abstraction from their working relations which his speculative interest might conceive.<sup>3</sup> Every real scientist is virtually a deputy of his

<sup>3</sup> As will appear later, when I refer directly or by implication to "things-as-they-are," I mean that concurrence of processes which we call "the visible universe," or any section of it which may be concerned in a given inquiry, as it interprets itself to the means of knowledge at present within the control of mankind. I have no thought of a metaphysical *Ding-an-sich*, nor of any other conceivable "ultimate reality" in a metaphysical sense. I am speaking strictly within the lines of those assumptions about the reality of the phenomenal world,

fellow-men, intrusted with the task of finding out some fraction of the truth about "things-as-they-are," which may at last be authenticated and evaluated by fitting into its place in the whole ascertainable system of truth. Curious intellectual pursuits which are not amenable to correction by correlation with all other investigations of truth are at best prostituted science.

This being the case, every attempt to state science in terms of independence and autonomy is in its way a repetition of the blunder which we are slowly unlearning, of trying to state human life in terms of a socially and psychologically impossible individualism. So far as we have found it out, the system of "things-as-they-are" with which our knowledge problems are concerned is a system of interlocking processes. We have to know partially a little something of a narrow range of these processes before we can know more of the wider sweep of the same or other processes; but each extension of our knowledge from the more partial to the less partial must involve, as one of its elements, some recognition of the dependence of the processes which we have observed more upon other processes which we have observed less. Putting the generalization, for instance, in terms of the particular problems with which this discussion is concerned, there can be no "science" of "men making choices in the market," which is not at the same time partly constructing and partly constructed by science of men making all other choices, and that in turn related in similar fashion to science of men in all the other activities which are the conditions or consequents of voluntary choices; and these approximate sciences again are always tentative expressions of processes that run into and out of the processes by which men are related to the physical cosmic process.

In a word, since reality as we know it is a plexus of interrelationships, the sciences which attempt to interpret portions of and about the competence of our practical reason to get acquainted with it, which are the necessary premises of all voluntary action. I am contrasting reality within the meaning of those assumptions, with liberties taken by individual or group fancy in disregard of those assumptions. The occasion for this explanation is stated in the passages referred to at the beginning of this note, i. e., pp. 207, 219, 220.

reality are bound to interpret each and all of them subject to what can be ascertained about their conditioning interrelationships. Scientific abstraction, therefore, is legitimate only on the condition that whenever a given abstraction is no longer necessary for the particular forms of inquiry which it facilitates, the question shall recur, By what connections with the whole are the relationships modified which have thus been abstracted for partial examination?

The second elementary principle which Dr. Hoxie's "Rejoinder" moves me to enlarge upon has been implied in what has already been said. It may be expressed in this way: *Science as a whole is the total result of the combined efforts of men to explain all that takes place within the range of human observation. A science is properly so called when it is such an explanation of particular types of occurrences that it tends both to interpret and to be interpreted by the whole of contemporary science, or when it brings to light phases of reality which call for reconsideration of more or less of what had previously ranked as science.*

The point now is that while science is a function of human intelligence as a whole, not an irresponsible amusement which individuals may shape to suit themselves, the objective side of science is a whole not subject to human wills. It is a plexus of conditions which hedge all men about. Whether men are scientists or not, they cannot flee from these conditions. Everything that is knowable is a function of this whole objective process. All knowledge or science is relatively complete, therefore, in the degree in which it interprets a phase or phases of these objective conditions in the relations which actually exist between it or them and all the surrounding conditions.

Suppose some physical convulsion had destroyed all the books in the world, and had made the memory of all of us a blank, so far as that could occur and still leave us in possession of our present grade of intelligence. Suppose that all recollection of pure science, both its content and its formal divisions, were effaced. Suppose that the living generation retained the rudiments of manual and mental technique, with all that we now

understand by the phrase, "the scientific attitude of mind," while the other results of science, including prepossessions about divisions of scientific labor, were swept away.

I will not say that I know what men in general would do under those circumstances. I can only say that I can imagine but one course of action that would be thoroughly appropriate. If the situation which I have supposed would leave men suggestible by realities only and not at all by conventionalities, it seems probable that it would be less difficult under those circumstances for men to take the appropriate course than it is now for conventionalized men to modify their preconceptions.

The intelligent procedure in the supposed situation, for men capable of scientific thought, would be to assemble in committees of the whole, or by representatives, in the most accessible centers in different parts of the world, to confront each other with a matter-of-fact summary of the conditions, and to take council together upon the most desirable courses of action.

In brief the situation would be this: Here we are, so many people, mysteries to ourselves, under mysterious limitations, prompted by miscellaneous active impulses. The immediate question is, *What is the thing to do?* Consultation would not go on long—assuming scientific intelligence without scientific knowledge—before it would be evident to all that the question, *What is the thing to do?* runs back to the questions, *What is the thing to know?*

So far as I am able to imagine the probable course of thought among men using merely the best scientific insight which the race has developed, with none of the impedimenta of accumulated opinion, they would conclude that the thing to know must embrace all the information to be had about all the consequences that must be depended upon to follow from all the different variations of circumstances, and of human conduct with reference to the circumstances, that can occur within human experience. Then the preliminary answer to the first question would amount to this: The thing to do consists of all the actions which our discovery of consequences shows to be useful toward

making the circumstances yield the most to satisfy a rational consensus of all our wants.<sup>4</sup>

If we were actually confronted with the task of tackling the whole problem of life, with neither help nor hindrance from accumulated beliefs, but merely in the exercise of our evolved physical and mental fitness to cope with reality as we encountered it, the assumption does not seem extravagant that all the men whom we now regard as scientific would presently reach a working agreement to this effect: We have a life to live, and we need to find out how to live it. The first step must be to ascertain the conditions of the life which we may or must live. Life will then consist first of accommodating ourselves to the conditions. If there is more to life, the scope of that more will doubtless appear in due time if we proceed to do our best to learn the inevitable conditions of life, and the main lines of adaptation.

Under those circumstances, knowledge would be appreciated from the start as relentlessly independent of men's hopes or fears or wishes or tastes or purposes. Knowledge would be understood not as something that men create and fashion to suit themselves, but as a reflection in men's minds of objective relations which the mind merely reports. It would be evident that knowledge is genuine rather than fanciful in the degree in which it resists capricious shapings of the imagination, and corresponds with actual relations in the world of experience.

Under those circumstances too, knowledge would get its correlations from the kind and degree of its pertinence to actual life conditions. It seems to me consequently highly probable that knowledge would be divided very early according to the degrees of generality and invariability in the relations which it attempted to set in order. At one end of the scale, for instance, we should have the absolutely invariable relations of quantity, capable of exact formulation as mathematics. At the other end of the scale we should have the highly inscrutable mutations of men's moods

<sup>4</sup> From our present standpoint we will interpret this phrase in the supposed case as implying a point of view that would lead at last to a content for the concept "wants" from which nothing would be omitted which we now find it necessary to include; i. e., the whole gamut of physical and spiritual wants.

and whims, capable of classification in qualitative categories, but utterly incalculable in detail. Between these two extremes real relations would be found to interpenetrate one another in diminishing degrees of generality and constancy.

Following this perception, it would be necessary for men exploring the conditions of life to render the first discovery in another form, viz.: *Relations about which we need knowledge may be arranged systematically according to the number of other relations which must be known in order to explain them precisely.* Some relations may be understood approximately with very little reference to other types of relations. For example, when we try to account for the motions of the heavenly bodies, we find ourselves at first approach dealing with a single kind of relations, and it is needless to inquire about other relations. If we try to understand relations of other sorts, we find ourselves obliged to make out an ascending ratio of coworking relations. For instance, when we try to account for the distribution of plants on the surface of the earth, we find that the relations involved greatly outnumber those encountered in the movements of the planets. Again, when we try to account for the distribution of human beings over the earth we find that more relations are concerned than in the case of the plants. If we go still farther, and try to account for the varieties of structures in the human groups so scattered, we find that still more relations are concerned than in the case of their mere distribution, etc.<sup>5</sup>

Having recapitulated the previous experience of the race to this extent, it seems to me that the positive scientists in our hypothesis would very soon add one more rudimentary principle to their methodology, viz.: *The credibility of any proposed explanation of specific relations depends in part upon the credibility of the accompanying explanation of all their reactions with other relations.* That is, men would discover sooner or later that real knowledge is to be gained not by forays into experience and then retirement into isolation, to treat the fragmentary booty of these expeditions as though the rest of experience did not exist. Men would discover that real knowledge consists of

<sup>5</sup> Sociologists will recognize in the last two paragraphs a partial paraphrase of Comte.



advancing step by step in the process of finding the functional connections between any portion of experience whatsoever and the total of experience which the combined observations of men have encountered.

The foregoing illustration has this bearing: As a link in a process of logical proof it would have neither force nor relevance. The point is not whether my guess about the conduct of hypothetical men in hypothetical conditions is probably correct. This would be a vain question. Whether or not real men, under the conditions of the hypothesis, would behave as I have imagined, the conduct which I have outlined in the illustration reflects, so far as it goes, the principles of positive science as I understand them. In a word the first presumption of science is that in the process which we call consciousness mind encounters some point or points of contact with a boundless extension of relationships which may be represented for convenience by the phrase "things-as-they-are." The second presumption of science is that real knowledge, or thought corresponding with reality, is to be gained only by tracing relation into relation so far as such discovery can go within the range of "things-as-they-are." In other words, the concept "science" is built up around the presumption that the human mind is responsible and reliable only in the degree in which its activities report and reflect relations which are discerned, not created, by the observing mind. This by no means excludes from the concept "science" the thousand-and-one direct and indirect devices for detecting relations within "things-as-they-are," which may be frustrated oftener than they succeed. The criterion for them is not whether they arrive or not, but whether they are in effect species of trial-divisors, eliminating hypotheses not strictly in accordance with reality, and thus narrowing down the line of approach to the precise relation sought.

With this explanation the fictitious situation which I have exploited at such length has a certain illustrative value. It furnishes a quasi-concrete background for more literal discussion of the two cardinal points involved in Dr. Hoxie's contention, viz., first, the positive theorem that sciences are, and of right ought to be independent and autonomous; second, the negative

theorem that, if it were desirable to correlate sciences, no principle can be found which could justify itself as a means of correlation.

With reference to the former of these contentions, I may first compress all that need be said into the single proposition that whenever a man of Dr. Hoxie's acumen uses an equivalent of the phrase "independence of the sciences," he grossly deceives himself if he thinks he wants to be taken literally. It is as impossible for sciences to be independent in a strict sense as it is for citizens of a state to be literally free. It would be a gratuitous affront to charge Dr. Hoxie with ignorance of this fact. It is as axiomatic to him as it is to me. Just as civic freedom is a condition in which each man's liberties are limited by every other man's rights, so knowledge is a condition in which each science is limited by every other science. Indeed, we imply this in all our later attempts to define science. When used intelligently the term means *such an arrangement of all that has been observed within the range of experience which has been critically investigated, that each part or phase of that experience helps to interpret each other part or phase of the whole experience.* We assume that we know anything only to the extent that we know all the ramifications of relationship of which the immediate object of knowledge is an incident or detail. What we call knowledge is to a considerable extent a process of judging kinds and degrees of interdependence between more immediately and intimately known relationships and less immediately and intimately known relationships. That is, there is no trait of knowledge, or science, which is more obvious than its constant and manifold relativity and dependence.

These things are no more familiar to me than they are to Dr. Hoxie. How is it possible then for him to affirm the independence of the sciences, and for me to deny it? Simply, as I showed in the first part of this paper,<sup>6</sup> by unwittingly smuggling different meanings into the same words, and then assuming that we are contradicting each other when one of us uses the positive sign and the other the negative before these identical

<sup>6</sup> *American Journal of Sociology*, Vol. XIII, pp. 9, 10.

verbal symbols. It requires but a moment's analysis to discover that the independence of the sciences which Dr. Hoxie affirms is a quite different affair from the independence of the sciences which I deny.

An analogy may serve to illustrate the difference. Three companies may operate, the first a steel plant, the second a glass factory, the third a flourmill. Legally and economically these three industries are independent of one another, but neither of them is independent of the facts of physics and chemistry. While no physicist nor chemist not an owner of these plants has a right to enter one of them and to order changes in the processes, any physicist or chemist who inspects one of the plants has a right to point out the fact, in case this, that, or the other process ignores or misapplies a law of physics or chemistry. In a precisely parallel way, no scientist functioning merely as a scientist has a right to give orders to other scientists. Every scientist has, however, a right to point out the inconclusiveness of any process of any science which fails properly to qualify itself by reckoning with relationships which are primarily the affair of other sciences.

Dr. Hoxie evidently interprets me as claiming for sociology the right of a superior officer to overrule the acts of inferior officers. In reality, what I am claiming for the methodological division of sociology, which is all that is here in question, is that it has a function parallel with that of the expounder of American Constitutional Law, in his relation to civic officials. With no civic authority whatsoever, the constitutional lawyer points out the relations of the different members of our complicated legal structure, from the petty local magistrate to the legislative, executive, and judicial departments of the federal government. All sorts of malfeasance in office might go on indefinitely, unimpeached by any act within the legal competence of the academic expounder of the law. In a legal sense the officials, good or bad, are utterly independent of him. In a wider moral sense they are derelict if their conduct in office disregards his interpretation whenever it correctly represents the Constitution. The professor of Constitutional Law is merely one of the factors which work

together in forming the public opinion and the national standards to which all officials are responsible. In like manner the sociological methodologist makes no claim to prerogative over other scientists except in a sense in which each of them has a prerogative over him. It is his division of labor to study the relations of function to function within the whole federation of scientific processes which the progress of knowledge has created. Whether other scholars pay him any attention is a matter which their own judgment decides.

Even this statement, or an equivalent, always provokes opposition. Most men who are primarily interested in analytic rather than in synthetic phases of science usually regard the methodological division of labor as offensively presumptuous. They assume that it implies a claim to encyclopaedic information which other scholars do not possess. This is as absurd as it would be to set down the profession of the American constitutional lawyer or the astronomer as impossible, on the ground that the former would have to know all the local ordinances of all the towns and cities, and the statutes of all the states, as well as the federal constitution and laws; while the latter would have to know all about the whole visible universe. I presume that the fallacy of such suppositions is plain to everyone who reads this argument, but such false conclusions are of the same type with refusals to recognize the function of the methodologist. The fact is that nobody can undertake any scientific investigation whatsoever without tacitly assuming some sort of a methodology. Instead of being exceptionally presumptuous the methodologists are exceptionally humble. They accept the burden of the conclusion that phases of scientific relations, which must sooner or later be the common law for everybody, deserve serious study by somebody.

Returning to the main proposition, that sciences are necessarily interdependent, not independent, and recalling, not as an argument but as an illustration, the hypothetical case of society obliged to rediscover knowledge from the elements, I would point out that the two questions which I put in the mouth of imaginary men represent, so far as we can see, the chief impulses of all

science. Inverting the proposition, all science is directly or indirectly the product of attempts to answer the question, *What is the thing to do?* and the involved question, *What is the thing to know?* Everything that has been learned so far is apparently but a small part of the truth within reach; and we have only a relatively cloudy view of the bearings which the different portions of our discoveries have upon one another. By comparison with the least cultured types, to be sure, modern civilized men have gone far in exploring the conditions of life. Measured on the other hand by what remains to be explored and explained, in spite of our brave conceit of sophistication we are still babes in the wood. At worst some of us who profess scholarship are contentedly settling ourselves to sleep in the softest spots we can find. It requires no extreme effort of the imagination to picture scholars at best as rather piteously crying themselves toward the light.

The main question, *What do we need to know?* sets to words the most helpless infancy of our ignorance. We have reached a stage at which we are able to ask this primary question of science in the more generalized form, *What are the conditions of life?* This widening of the terms of the question implies a tremendous advance from the first stage, and an enormous increment of wisdom. Involved in this wider vision and deeper insight is the conviction that nothing can be counted in with science unless it has some presumptive value as a factor in the explanation of "things-as-they-are." Everything that has scientific value is entitled to it by virtue of relations through which it both interprets and is interpreted by the rest of "things-as-they-are."

Expressed in another way, science is reality registered in the human mind. Whatever be the metaphysics of the relations between these two factors, about which I shall say a qualifying word later,<sup>7</sup> the two terms, "reality" and "mind" are correlates in the human situation. Neither can be ruled out of consideration without reducing the motions of science to an absurdity in comparison with which clowns' stunts in the circus would be

<sup>7</sup> Cf. below, pp. 219, 220.

rather rational performances. Science is not what the scholar would like reality to be, nor what the scholar chooses to think of reality as being. Science is the relations of the real world thought faithfully as they are found to occur in actual experience. Without stopping to enlarge on the truism that science must always at best be partial and approximate and provisional, the essential item in the present connection is that, no matter what our subdivisions or classifications of science may be, if they are scientific at all each of them must be dependent upon all the rest, because each deals with relations which are incidental to the whole of reality. Those incidents cannot be known as they are except in the degree in which they are interpreted in their functional and proportional relations with the whole of reality.

Waiving consideration of those factors in the conditions of life which furnish the problems of the physical sciences, what do these latter propositions mean for the social sciences?

For the matter now in question they mean that no type, nor group, nor series of relations, whether of men to things or of men to men, can be abstracted from the total conditions of life, and treated, except in a merely provisional way, as though they existed of, for, and by themselves, without thereby and to the extent of that abstraction falsifying science through misrepresenting reality. For technical convenience the ethnologist may devote himself to one type of relations, the historian to another, the political scientist to another, the economist to another, the sociologist to another, etc. If however, either of these specialists goes so far as virtually to ignore the meaning of the other types of relation, and to treat the relations to which he is partial as though they could be regarded by themselves as constituting reality, or if he assigns to them more than their proportional value as determined by their part in all the processes which make up "things-as-they-are," his pursuit to that extent ceases to be science and becomes mere sport. In such a case, a distinct and decisive function in the constitution of science is omitted, viz.: the reuniting of each factor analyzed out of reality with all the ascertainable functions of reality.

When a process of genuinely scientific research begins, the

phase of reality to be investigated presents itself to the mind as a relatively undifferentiated mass. Analysis breaks up that mass into components. The scientific process does not end with microscopic inspection of some or all of the components. It ends by reconstructing the components in such a way that the same mass reappears no longer as a mass but as a unit. Each complete scientific process traverses this cycle. It is the final stage in this cycle which the methodologist particularly desires to promote.

In a word then, it seems to me that the chief reason why Dr. Hoxie and I cannot see things alike in this connection is that there is a real difference of emphasis, which has the effect of a difference of structural principle, in our fundamental conceptions of science. I find the ultimate criterion of science in the inviolable constitution of the reality which the mind tries to explore. Dr. Hoxie's argument runs straight back to the assumption that the decisive criterion of science is the interest of the mind that encounters the reality. The more openly we recognize this antithesis the better. It is as old as human thought; and it is apparently as true of the individual mind as of the racial mind that it has to grope its way through the theological stage, and the metaphysical stage to the positive stage in getting itself settled. There is some truth on both sides of this *cause célèbre*, viz., the things to be known vs. the mind that tries to know. Neither side alone is the whole truth. The interests of the exploring mind are of course the active agents in creating science, but the constitution of objective reality, mind of course included, is the ultimate condition which at last dictates the science which can be created.

If it were necessary to carry the argument into further detail, I think I could show that when put on the defensive the interest criterion always has to fly the signal of distress, and to accept deliverance at the hands of some kind of objective criterion, so soon as it is taken at its word and required to explain why it balks at rating as science a long list of constructions produced by interest in the bizarre and the trivial.<sup>8</sup>

It is time to point out that this fundamental principle of the

<sup>8</sup> Cf. *American Journal of Sociology*, Vol. XIII, pp. 13-15.

necessary interdependence of all positive investigations of human experience is not an esoteric doctrine. It is not a novelty. It is not a speculation. It is merely a digest of the practical conclusions which have been reached in more specific forms, first by the physical scientists, and then less consciously by the social scientists. Perhaps the most instructive history of social science in the nineteenth century which could be projected would show this line of development: first, reaction from a-priori treatment of the facts; second, substitution of an extreme attention to typical details so arbitrarily abstracted from the actual conditions that the so-called sciences of society were in effect speculations of a new order upon microscopic sections of reality; and third, the most instructive account that could be given of the social sciences during the last quarter century would "feature" the fact that their gains have been largely through return from this extreme abstraction and extension of their correlations into one another's problems, instead of persisting in the policy of splendid isolation.

A single illustration will show what I mean. In 1874 the historian Von Treitschke published in *Preussische Jahrbücher* an elaborate indictment of Professor Schmoller upon the charge of propagating socialism. The accused was then in the earlier years of his progress toward his present secure position in the first rank of economists. Time has shown that Von Treitschke's charge was not only misdirected but grotesque. Schmoller however felt called upon to defend himself. His reply is one of the conspicuous mile stones along the route of later progress in social philosophy. Without generalizing to the extent which has been necessary in this discussion, Professor Schmoller implicitly rests the special case upon precisely the principles which I have been stating. A single paragraph is sufficient evidence. He says:

Every economic organization is determined by two series of relatively independent causes. On the one side are the "natural" causes, upon which the older national economy fixed its attention exclusively. On the other side are those causes which have their source in the psychical and moral life of peoples. These have been mentioned now and then, to be sure, but their meaning for national economy has never been systematically investigated. There never will be a science of national economy in the strict sense of the term until not merely the first but also the second series of causes



is thoroughly investigated. The first series of causes constitutes the natural substructure, the foundation of economics. The causes that belong in the other series constitute a much more movable underpinning (*Zwischenbau*) so to speak, upon this foundation. The two together are necessary for a decisive result. Only upon the two together can a definite economic structure rest. A very large part of all economic investigations up to the present made the great mistake of attributing this last result, i. e., definite economic conditions, directly to the first series of causes. They forgot or disregarded the whole intermediate structure, and consequently heaped false conclusions upon false conclusions. They were continually vitiated by the attempt to make technical and natural antecedents explain what is back of all technique. They declared that from definite technical facts a given social order and legal system must necessarily follow. The truth is, as history abundantly shows, that these antecedents and consequents may greatly vary. That is, they misunderstood the nature of morals and of law, the power of ethical sentiments and cultural ideas, which also determines the whole economic system.<sup>9</sup>

But I will rest this part of the argument here. Further considerations in point will occur in connection with Dr. Hoxie's second main count, viz., *the supposed impossibility of discovering a synthetic principle*.

It is necessary to note in passing that Dr. Hoxie has twice in his rejoinder employed against me the rather obvious device of attributing to an opponent views which he repudiates, and for which he is in no way responsible. Having given my name to a very weak specimen of the genus man-of-straw, it is no trick at all to demolish him. Without wasting time to enumerate the different types of mental principles to which I do not appeal, I will again try to state my argument as directly as possible.

I start with the postulate that science at a given moment is so much of an answer as men have up to that date succeeded in giving to the companion questions, *What is the thing to do?* and *What is the thing to know?* I assume that the thing to know consists of all the real relations that have to be counted on, in the manner and degree in which they have to be counted on, in human experience. I assume that, at every stage, and every step of every stage of the process of developing science, every tentative knowledge of a particular relation is liable to correction

<sup>9</sup> *Ueber einige Grundfragen des Rechts und der Volkswirtschaft*, p. 42.

by what can be ascertained about all other relations. This may be generalized into a formal expression of the most rudimentary principle of scientific synthesis, viz.: *Every supposed real relation acquires scientific precision and finality in the degree in which its articulation with the whole universe of objective relations is ascertained.* Or more simply expressed, every phase of reality is a function of reality as a whole, and science is not merely knowledge of detached phases, but of the ways in which these phases are related to one another. More simply still, we cannot know all that is possible about anything until we know all that is possible about its connections with everything.

In these propositions I am again not exploiting a novel theory. I am simply repeating in my own way the alphabet of positive science. In some form or other these things are as axiomatic as the multiplication table to every full-fledged physical scientist. It is only among men who deal with the humanities that anybody who ranks as a scholar betrays uncertainty about these fundamentals. Physical science is not physical facts arranged merely to suit the mental side of the reaction between mind and "things-as-they-are." Physical science is the mind's accommodation of itself to physical facts. Suppose we had every molecule of matter that ever had been or ever could be examined in a given chemical laboratory, and every vital cell that could ever be examined in a physiological laboratory, arranged each in a labeled pigeonhole of its own, in a block of pigeonholes like the boxes in a post-office. Those areas of labeled pigeonholes would not be a science of chemistry or physiology. Such a display of chemical or physiological specimens might suit some minds and serve some purposes, but reality is not arranged in that way, and whatever we think about it, we must learn to get to reality as it is before we shall have achieved science. The physical sciences have done what they have done toward interpreting their phases of reality by falling into line with this inevitable principle. Time was when men told what purported to be the truth about the stars by constructing them into fabulous constellations. We now know that there are no constellations in the picture-book sense, and we are interpreting what goes on in the

most distant and vaporous nebula as a part of the same process which turns our water-wheels and boils our teakettles. We have found out that there are orders of relations inorganic and organic, which recur according to constant laws, and which are variants of one another in partially ascertainable ways. So far as these relations are made out, they constitute a system of the known. The inexorable law of synthesis or correlation in physical science is that no apparent discovery of a new fact or relation can be recognized as a permanent part of science until it has either reconstructed the previous synthesis or made it probable that it has a place somewhere within the synthesis. Physical science has partially answered the question, *What is the thing to know?* or *What are the conditions of life?* by charting a physical universe that is not discontinuous, nor heteronomous, but a complex unity of forces which act consistently from atom to planetary system. Every item of supposed knowledge that aspires to the rank of science must show credentials that admit it to a place in such a universe.

When we turn from the physical to the moral division of reality, do we pass from congruity and coherence and consistency and regularity and interdependence and unity, to incongruity and incoherence and inconsistency and irregularity and independence and anarchy? If we select groups or types or series of human actions, and arrange them in pigeonholes according to any arbitrary fancy whatsoever, will the result be a science? I have never seen nor heard of a scholar in the social sciences who would deliberately answer these questions in the affirmative. I have occasionally met scholars who were agnostics as to *ascertainable* laws of coherence in human affairs, but so far as I know scholars as a rule believe that human conditions and actions conform to laws after their kind just as truly as the waves of the sea conform to the laws of physics.

It is not a part of my present task to schedule those laws. The question which Dr. Hoxie raises is whether there is any principle by which human relations may be so co-ordinated that common laws of those relations may be discovered. My answer is that the principle by which human relations may and must be

correlated, until we discover a more comprehensive principle, is a projection of the principle under which physical phenomena are scientifically unified, viz.: *The laws of physical and chemical and vital causation and correlation continue their sway in the affairs of men, with the added variant of the laws of psychical causation, whatever these may prove to be.* Just as only *pseudo*-physical science can come from attempts to systematize material relations in disregard of the laws of physics and chemistry and biology, so only *pseudo*-social science can result from attempts to systematize human relations in disregard of the laws of physics and chemistry and biology, plus the peculiar variant of human conditions—the laws of psychology. Just as there is no type nor phase of physical phenomena which can be constructed into a physical science except as it is correlated with the general laws of physics and chemistry and biology of which it is a resultant, so there are no types nor phases of social phenomena which can be construed into social sciences except as they are correlated with the general laws of physics and chemistry and biology, and in particular of psychology, of all of which they are resultants.

When we are dealing scientifically with any portion of human experience whatsoever, our problem is to interpret a segment of that portion of reality in which inorganic and organic evolution have passed into psychic evolution. *The human phase of reality consists, so far as we can see at present, of the evolution of types of interests, the evolution of types of individuals combining the interests, and the evolution of types of association between the individuals in pursuit of their interests, the whole succession of cycles proceeding in constant interrelation with the play of cause and effect which constitutes the physical conditions of the human process. Everything that deserves rank as social science must find its correlation somewhere within this cycle.* The processes peculiar to psychic evolution are variations of knowing and valuing and willing in the individuals who carry on the processes. Any cross section, or combination of social relations which is not co-ordinated with this process of psychic evolution is at best science gone wrong. No matter how large the abstraction may

bulk which is thus dislocated from the actual human process, it is not a positively justified science, any more than one "science" of red cows and another of black cows and another of brindle cows would be maintainable divisions of zoölogy. The human reality is men swirling through the cycles of evolving interests, evolving personalities, evolving associations.<sup>10</sup> Human science is valid interpretation of any portion of this process, *always presuming that it is treated at last as a portion of the larger process, not as a detached entity.* Any systematizing of human phenomena in such a way as to wrest them out of their functional correlations with the whole human process is, to the extent of that insulation, a miscarriage of science.

The leading principle then by which partial knowledge of human experience must be correlated with all the knowledge of experience that is attainable is not an a-priori assumption of any sort. It is a generalization which expresses algebraically the sum total of our present insight into one dimension of reality, viz.: *For our intelligence the most central process within the range of experience is the evolution of human personality; for our intelligence therefore every separable phase of human experience must get its meaning and valuation from the connections which we discover between it and the central process of the evolution of persons.*

In conversation with Dr. Hoxie since this discussion began I have learned that in his mind my argument is fallacious because it involves disregard of "pragmatism." As I confessed in the first part of this paper, I can make no defense against the charge that my meaning is obscure. If I have not made my thought plain the fault must be my own. In fact, however, I have not intended to imply in this argument anything whatever which is in controversy between pragmatism and not-pragmatism, whether the reference is to psychological or logical or meta-

<sup>10</sup> While expressing the relation in this way, I am conscious that, for the sake of emphasis, I am using figurative language which is open to serious objection. I should be contradicting myself if I spoke literally of "men" as fixed factors going through a process. The "man" in the case is of course a variable, quite as much as his relations with the other variables in the whole process.

physical types of the former doctrine. If any division of science or philosophy discovers a principle or a particular of knowledge which has a bearing upon interpretation of social relations, my whole argument requires that the discovery should have full faith and credit in the construction of social science. I am unable to see, however, that anything material to the present argument would be changed in the least if it became necessary to restate it in terms either of pragmatism or of not-pragmatism. Questions of epistemology do not fall within the present inquiry. It deals with reaches of phenomena about which, for the purposes of the social sciences, we assume that we have trustworthy sources of information. The grounds of that assumption present problems for other sciences, but, without prejudging those problems, everything which I have urged is maintainable for all purposes upon the plane of the social sciences.

Dr. Hoxie scents danger and dogma wherever I use any variation of the idea of "final" or "ultimate" criteria for science, in particular for social science. He understands me to be claiming right of asylum in an arbitrary metaphysical concept. On the contrary, my argument is in that respect of the same logical type with the everyday legal judgment in the United States that a decision of the Federal Supreme Court is the law of the land. It is "ultimate" and "final" *within its sphere*. At the same time there is no denying that the law of the land is only relatively final. It may be *casus belli* to other nations tomorrow, and the day after it may be repealed by the law of the bigger stick. Or the law of the land as it stands today may be a law which presupposed conditions which will be superseded by different conditions tomorrow, and then constitutional enactment or extra-constitutional revolution may substitute another law. Nevertheless, although the law as determined by our Supreme Court is merely of a piece with the relative and transitory character of all finite affairs, yet it would be hypercritical to raise a point against lawyers' use, for strictly legal purposes, of synonyms of the terms "final" and "ultimate" in connection with the law of the land. In a precisely parallel way, human experience reaches out to a certain circumference of relations which our knowledge can

neither ignore nor overstep if it pursues a strict program of positive science. Within this circumference there are certain relations that are just as "final" and "ultimate" in their way as the law of the land is in its sphere in its way. It is just as hypercritical to challenge the use of the terms "final" and "ultimate" in their obvious accommodation to the recognized limitations in the latter instance as in the former.

To remove Dr. Hoxie's suspicion that I am surreptitiously anchored to some assumed metaphysical ultimate, I am perfectly willing to admit that, for all I know, there may be millions of worlds in each of which, measured by some standard of which we have no knowledge, something is going on infinitely more important than the whole sum of experience on this planet. If we had means of knowing this conceivable situation to be actual, with no more ability than we have at present to imagine a content for the actuality, my argument would not have to be altered in the least. I am not attempting to make formulas to fit ultimate or abstract realities in the metaphysical sense, nor am I proposing generalizations of cosmic scope. I am insisting on the fact that the phenomena of human experience as we actually observe them are not independent one of another, and the mental constructions of those phenomena as though they were independent of one another falsifies the reality of our experience instead of interpreting it.

Nor am I in any dogmatic sense resting my argument, thus limited in scope, on the alleged finality of the correlating generalization which I may abbreviate in the form: "the evolution of human personality." I am squinting toward no logical police ordinance on which I am relying to prevent the supplanting of that generalization by a wider and truer one. Again, for all I know to the contrary, a more far-seeing interpretation of the human phase of reality than is at present in sight may be offered before this paper is in print. If this deeper and broader look into reality should occur tomorrow, unless it should upset present calculations by showing cause for interpreting human experience as uncentered instead of concentered after all, the substance of my claim would be undisturbed; viz.: *Each*

*passage of human experience is somehow a function of all the rest of experience, and it will not be known scientifically until it is interpreted in terms of its relations with all the rest that is occurring within the range of human knowledge.*

I make no apology for having gone so far afield to explain my version of the method by which the true meridian must be found as a base line for all social science. The upshot of the whole matter is this: The social sciences are not called upon to adjudicate the metaphysical question "appearance vs. reality." There is a true sense in which things are what they seem. Within that sense all the sciences have their vocation. Viewed from the psychological angle of approach, all the sciences are responses to that imperative in men which may be cartooned as a crusade for answers to the question, *What is to be known?* in the interest of the question, *What is to be done?* To change the figure, the sciences are not direct attempts to legislate for men, yet the sciences must be the tables of stone on which the world's most lasting decalogues will appear. One of the deepest motives of science is an impulse which makes toward expression in this form: "Know all men by these presents: Through and through the apparent instabilities and irregularities of the knowable there are certain relative stabilities and regularities. These we set in order to guide all sorts and conditions of men. Under similar circumstances certain relations will surely recur. You may doubt this prophecy, and you may ignore it, but it will return to trouble everyone who is not wise in his generation." The sciences whose division of labor is the aspects of reality which converge in the evolution of mankind have their place as a corps of the grand army of discovery. Their indicated line of operations is merely a detail of the general strategy. It is their business primarily to find out how things actually work together in the concrete physical and social conditions which make up the human lot. It is their business in the second instance to demonstrate a scale of values among the types of activities possible in different situations, on the basis of their ascertained effects upon the ultimate process thus far visible to us, the evolution of persons and of reciprocal personal relations. If one accepts service within the ranks of the social



sciences one is bound to conform to the discipline of "things-as-they-are." In the degree that any programme of social science claims liberty to abstract itself from complete correlation with knowledge and valuation of "things-as-they-are," it falls in the class with a conceivable neo-mathematics, which might start from the major premise that, for its purposes, two and two should be supposed to make five.